

HYDROIDA

BY

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WITH SIX TEXT-FIGURES AND ONE PLATE.

INTRODUCTION.

OUR knowledge of the Hydroid Fauna occurring in the warm, shallow waters of Eastern Queensland is based mainly on the works of Bale, supplemented by the reports of Busk, Allman and Kirkpatrick. These authors have described and recorded many species from the islands and bays within the protection of the Great Barrier Reef, which extends from the neighbourhood of Torres Strait along the north-east coast of Australia for a distance of 1250 miles.

Collections of Hydroids from the Great Barrier Reef, however, have been surprisingly few, owing, no doubt, to the difficulties encountered during dredging operations among the coral patches that extend over large areas of the ocean floor in this region.

The Hydroids recorded in the following pages from the Great Barrier Reef represent a small but extremely interesting collection of thirteen species, which were obtained as the result of (1) shore collecting and diving at Low Isles, (2) collecting on the reefs of the Outer Barrier and at Lizard Island, and (3) a series of dredgings carried out at twenty-seven stations along the Queensland coast. Hydroids were secured in seven of these hauls, which were made at depths varying from 4 to 28 fathoms.

The collection contains five species, which are here recorded for the first time from the tropical waters of Eastern Australia, viz. :

Myrionema amboinense, Pictet.

Endocrypta parasitica (Kirk).

Clytia delicatula (Thornely).

Hebella crateroides, Ritchie.

Hincksella sibogae, Billard.

Of special interest is the occurrence of the parasitic Hydroid, *Endocrypta parasitica* (Kirk), on the inner surface of the branchial siphon of a Tunicate (*Polycarpa procera*), which was dredged at Station XXV, Papuan Passage, at a depth of 20 to 25 fathoms. This remarkable Hydroid has previously been recorded only from Tunicates collected in Wellington Harbour, New Zealand, where it was found in the peripharyngeal groove of *Polycarpa* sp., and the stalked Ascidian *Boltenia pachydermatina*.

The hitherto unknown gonosome of *Plumularia longicornis*, Busk, is described and figured, and the species referred to the genus *Halicornaria*.

LIST OF SPECIES.

ATHECATA.

Family EUDENDRIIDAE.

- *1. *Myrionema amboinense*, Pictet.

Family CLAVIDAE.

- *2. *Endocrypta parasitica* (Kirk).

THECATA.

Family CAMPANULARIIDAE.

- *3. *Clytia delicatula* (Thornely).

Family LAFOEIDAE.

- *4. *Hebella crateroides*, Ritchie.

Family SYNTHECIIDAE.

- *5. *Hincksella sibogae*, Billard.

Family SERTULARIIDAE.

6. *Dynamena crisioides*, Lamouroux.
7. *Idiella pristis* (Lamouroux).

Family PLUMULARIIDAE.

8. *Polyplumaria cornuta* (Bale).
9. *Thecocarpus angulosus* (Lamarck).
10. *Lytocarpus philippinus* (Kirchenpauer).
11. *Lytocarpus phoeniceus* (Busk).
12. *Halicornaria longicornis* (Busk).
13. *Aglaophenia cupressina*, Lamouroux.

LIST OF STATIONS.

The following is a list of the localities at which Hydroids were collected by the Expedition :

LOW ISLES.

Myrionema amboinense, Pictet.
Clytia delicatula (Thornely).
Dynamena crisioides, Lamouroux.
Lytocarpus philippinus (Kirchenpauer).

LOW ISLES.

DIVING STATION, No. 1.

Hebella crateroides, Ritchie.
Lytocarpus phoeniceus (Busk).

OUTER BARRIER ; RIBBON REEF.

Aglaophenia cupressina, Lamouroux.

OUTER BARRIER ; JUNE REEF.

Aglaophenia cupressina, Lamouroux.

LIZARD ISLAND ; REEF A.

Aglaophenia cupressina, Lamouroux.

* Indicates that the species is here recorded for the first time from the Great Barrier Reef.

CAPE KIMBERLEY, 4 fathoms ; 2nd December, 1928.

Polyplumaria cornuta (Bale).

STATION II.

Linden Bank, 28 fathoms ; bottom, shell and sand ; 24th November, 1928.

Hincksella sibogae, Billard.

Idiella pristis (Lamouroux).

Polyplumaria cornuta (Bale).

Thecocarpus angulosus (Lamarck).

STATION IX.

Penguin Channel, 12 to 14 fathoms ; 22nd February, 1929.

Idiella pristis (Lamouroux).

Thecocarpus angulosus (Lamarck).

Halicornaria longicornis (Busk).

STATION XII.

Penguin Channel, 10 to 15½ fathoms ; bottom, rock and shell gravel ; 24th February, 1929.

Idiella pristis (Lamouroux).

Thecocarpus angulosus (Lamarck).

Halicornaria longicornis (Busk).

STATION XIII.

Half a mile west of Two Isles, 16½ fathoms ; 7th March, 1929.

Idiella pristis (Lamouroux).

Thecocarpus angulosus (Lamarck).

STATION XXII.

East of Snake Reef, 13½ fathoms ; bottom, mud with Foraminifera and shells ; 11th March, 1929.

Thecocarpus angulosus (Lamarck).

STATION XXV.

In Papuan Pass, 20 to 25 fathoms ; bottom, Foraminifera and coral fragments ; 17th March, 1929.

Endocrypta parasitica (Kirk).

Thecocarpus angulosus (Lamarck).

ATHECATA.

Family EUDENDRIIDÆ.

Genus *Myrionema*, Pictet.

TROPHOSOME.—Hydrocaulus well developed, monosiphonic, irregularly branched, surrounded by perisarc. Hydranths long, slender and vase-shaped; hypostome short and slender, distinctly trumpet-shaped; tentacles filiform, very numerous, arising from the base of the hypostome, and arranged in two or three closely appressed rows.

GONOSOME.—Female gonophores of the streptospadiceous type, with the spadix almost completely encircling the ovum; borne on the hydranth in verticils of, typically, from four to six.* Male gonophores chambered, club-shaped, typically two to a hydranth on opposite sides.

GENOTYPE.—*Myrionema amboinense*, Pictet.†

Myrionema amboinense, Pictet. (Plate I, figs. 1–3.)

Myrionema amboinensis, Pictet, Rev. Suisse Zool. I, 1893, p. 19, pl. i, figs. 12, 13; pp. 62–64, pl. iii, figs. 55, 56; *idem*, Svedelius, Svensk. Bot. Tidskr. I, 1907, pp. 32–50, figs. 1–6; *idem*, Stechow, Arch. Naturgesch. LXXXVIII, Abt. A, Heft 3, 1922, p. 145; *idem*, Stechow, Zool. Jahrb. Syst. XLVII, 1923, p. 79.

Eudendrium griffini, Light, Philipp. J. Sci. D, VIII, 1913, pp. 333–356, pls. i and ii; *idem*, Hargitt, Philipp. J. Sci. XXIV, 1924, p. 475.

Many colonies of this extremely interesting Hydroid, which was originally described by Pictet from the Island of Amboina, were collected at Low Isles, where the species forms a very characteristic feature of the flat-life of the lagoon. Our material was gathered in large quantities at low tide, attached to dead coral fragments, to marine grasses and calcareous sea-weeds, and to the roots of mangrove trees.

Pictet's specimens were sterile, and the gonophores remained unknown until 1913, when Light published his description of *Eudendrium griffini* from Bantayan Island in the Philippines. Light's species is identical with *Myrionema amboinense*, Pictet; consequently we have arranged the synonymy as above, retaining *Myrionema* as the generic name, but placing it in the Family Eudendriidæ, instead of the Family Myrionemidæ, which Pictet erected for the accommodation of his new genus and species, *M. amboinense*.

Light's description and figures add many interesting details to Pictet's account, which was based on very scanty material from Batou-Mera, Bay of Amboina.

The specimens collected at Low Isles agree in all respects with the characters of the trophosome and of the gonophores as set out by Light; the dimensions are in complete accord with those given for *E. griffini*; but the account of the process by which the deposition of the ova on the pedicels takes place is not corroborated by the stages present in our specimens. Dr. E. A. Fraser, however, has studied this problem with the aid of living specimens, and her observations and conclusions will form the subject of a separate contribution to our knowledge of the Hydroids from the Great Barrier Reef (see Vol. III, No. 4).

* Dr. Fraser, in her report on *Myrionema* in Vol. III of this series, figures up to ten.

† Not *amboinensis*: *Myrionema* is neuter gender.

TROPHOSOME.—The details of the trophosome have been worked out by Light, who recognized the differences between the male and female hydranths. The male hydranths (Plate I, fig. 1) are long, slender and vase-shaped: the sexually immature or sterile female hydranths are similar in appearance to those in the male; the fertile female hydranths (Plate I, fig. 2) are shortened and thickened, and often atrophied.

The arrangement of the tentacles in two or three closely appressed rows immediately distinguishes this form from the members of the genus *Eudendrium*. The hypostome is trumpet-shaped, and is usually hidden by the long tentacles, which arise from around its base, and extend directly forwards in a dense fringe.

GONOSOME.—Pictet did not observe the gonophores, but these have been fully described by Light. Both male and female gonophores, as well as eggs attached to the pedicels, have been found on the specimens from Low Isles.

The female gonophores are of the streptospadiceous type with the spadix almost completely encircling the ovum, but with the proximal end not recurved or bifurcated; they are borne on the proximal region of the hydranth in verticils of, typically, from four to six.

The male gonophores are chambered, club-shaped structures of rather irregular outline; they are occasionally bifurcated distally in a vertical plane. There are typically two to a hydranth on opposite sides, slightly below the bases of the tentacles.

Eggs (Plate I, fig. 3) were also observed attached firmly to the perisarc of the pedicels.

ZOOXANTHELLAE.—Great numbers of symbiotic algae (Zooxanthellae) occur throughout the endoderm cells of the coenosarc, gastric cavity, tentacles and gonophores. They are extremely numerous in the endoderm cells of the tentacles, where they form a closely packed layer just within the peripheral walls. Pictet has evidently mistaken these algae for the endoderm cells in the tentacles of *M. amboinense*; his drawing (plate iii, fig. 56) of a transverse section through a tentacle clearly shows the zooxanthellae, but he failed to detect the walls of the endoderm cells, and consequently believed that the structure of the tentacles was unique among the Hydroids. Light was unable to identify any of the spherical bodies of the ectoderm cells as Zooxanthellae, but a few scattered examples of these symbiotic algae were observed in the ectoderm cells from the coenosarc of our Low Isles specimens.

SYNONYMY.—Light's *Eudendrium griffini* from Bantayan Island, Philippines, is identical with *Myrionema amboinense*; therefore we have arranged the synonymy as above. Hargitt has also recorded this Hydroid from the Philippine Islands under the name of *E. griffini*.

SYSTEMATIC POSITION.—Pictet erected the Family Myrionemidae to accommodate his new genus and species, *Myrionema amboinense*. We prefer to regard this Hydroid as a primitive member of the Family Eudendriidae, basing this assumption on the characters of the trophosome, as well as on the form of the male and female gonophores. Stechow has expressed the opinion that *M. amboinense* directly connects the Family Eudendriidae with the Clavidae and not with the Bougainvilliidae.

LOCALITY.—Low Isles, Great Barrier Reef. This Hydroid was gathered at low tide in great quantities, attached to dead coral fragments, to marine grasses and calcareous sea-weeds, and to the roots of mangrove trees growing in the lagoon.

DISTRIBUTION.—Previously recorded from Batou-Mera, Bay of Amboina (Pictet); Ceylon (Svedelius); Bantayan Island, Philippines (Light); Philippine Islands (Hargitt). This species is new to the Great Barrier Reef.

Family CLAVIDAE.

Genus *Endocrypta*, Fraser.

Crypta, Fraser, Bull. Labs. Nat. Hist. Univ. Iowa, VI, i, 1911, p. 19.

Endocrypta, Fraser, Trans. Roy. Soc. Canada (3), VIII (Sect. 4), 1914, p. 109.

Ascidioclava, Kirk, Trans. N. Z. Inst. XLVII, 1914 (1915), p. 146.

GENOTYPE.—*Endocrypta huntsmani*, Fraser.

Endocrypta parasitica (Kirk).

Ascidioclava parasitica, Kirk, Trans. N. Z. Inst. XLVII, 1914 (1915), p. 146.

Specimens of this very remarkable parasitic Hydroid occur on the inner surface of the branchial siphon of a Tunicate, *Polycarpa procera* (Sluiter). The characters present in both the trophosome and gonosome are in extraordinarily close agreement with those given for *Ascidioclava parasitica*, which Kirk found in association with Ascidians collected in Wellington Harbour, New Zealand. According to Kirk's account, this Hydroid occurs in the peripharyngeal groove of a species of *Polycarpa*, as well as in the stalked form *Boltenia pachydermatina*.

Fraser has also described, under the name of *Endocrypta huntsmani*, a rather remarkable species found only in the branchial cavity of simple Ascidians dredged in from 5 to 20 fathoms in Departure Bay, Vancouver Island, British Columbia. These Hydroids were not confined to individuals of the same species, since specimens have been discovered in members of the genera *Phallusia*, *Ascidioopsis*, *Ciona* and *Tethyum*.

A comparison of the Barrier Reef specimens with a slide of Fraser's material in the Australian Museum Collection reveals the generic identity of *Ascidioclava* with *Endocrypta*, and since the latter genus has priority, we arrange the synonymy as above, changing the name of Kirk's species to that of *Endocrypta parasitica*.

There is also to be noted a very striking resemblance between the specific characters of these two Hydroids, but in view of the slight differences, which appear to be constant, we prefer to retain *E. parasitica* as a distinct, though closely-related species.

TROPHOSOME.—The hydrocaulus and hydranth together reach a height of nearly 3 mm. In this respect *E. parasitica* differs considerably from *E. huntsmani*, which is a much larger and more robust species, attaining a height of 8 mm.

The hydranth is distinctly club-shaped, with its proximal end narrowing rather abruptly at its junction with the hydrocaulus. In *E. huntsmani* the hydranth passes almost imperceptibly into the hydrocaulus, whose diameter is very slightly less than the greatest width of the hydranth.

The shape of the manubrium varies considerably in the preserved specimens, but the mouth never becomes reflexed entirely, so that it is folded back over the bases of the tentacles, these also being turned backward to point towards the base, as sometimes happens in *E. huntsmani*.

In Kirk's New Zealand specimens the hydrocaulus remained unbranched. We have observed in a single instance a branched hydrocaulus, but the division had taken place just above the hydrorhiza, resulting in the formation of two well-developed hydrocauli. Fraser has described a forked condition, in which the division occurred directly below the bases of the hydranths, so that "the two parts seem to be of equal significance, and seldom differ much in size."

In both species the tentacles have a jointed appearance, due to the arrangement of the nematocysts, which occur in large numbers throughout the ectoderm.

GONOSOME.—The specimens bear developing medusa-buds, either singly or in groups of two, near the base of the hydranth. The most advanced stage is provided with four very short, blunt tentacles. This bud is distinctly campanulate, with a very short stalk. The manubrium is pear-shaped.

SYNONYMY.—Trebilcock* identifies *Ascidioclava parasitica*, Kirk, with *Endocrypta huntsmani*, Fraser. Whilst regarding these Hydroids as congeneric, we have retained Kirk's species and changed the name to *Endocrypta parasitica*.

LOCALITY.—Station XXV, in Papuan Passage, 20 to 25 fathoms; bottom, Foraminifera and coral fragments, 17th March, 1929.

DISTRIBUTION.—Previously recorded only from Wellington Harbour, New Zealand. This species is new to the Great Barrier Reef.

THECATA.

Family CAMPANULARIIDAE.

Genus *Clytia*, Lamouroux.

Clytia delicatula (Thornely).

Clytia sp., Inaba, Zool. Mag. Tokio, 1890, figs. 34, 35.

Obelia delicatula, Thornely, Willey Zool. Res. IV, 1900, p. 453, pl. xlv, fig. 7.

Campanularia delicatula, Jäderholm, Bih. Svensk. Vetensk. Akad. Handl. XXVIII, Afd. 4, No. 13, 1902, p. 3.

Clytia delicatula, Stechow, Abh. Bayer. Akad. Wiss. III Suppl.-Bd., 2 Abh., 1913, p. 65, figs. 20, 21; *idem*, Stechow, Zool. Jahrb., Syst. XLVII, 1923, p. 109.

It is with some hesitation that we refer this frail species of *Clytia* to Thornely's *Obelia delicatula*, which was originally collected by Willey in Blanche Bay, New Britain, at a depth of forty fathoms. Thornely's exceedingly brief description omits all reference to the salient features of the gonosome, although gonangia were present with recognizable medusae.

Stechow has identified *Obelia delicatula* Thornely with Inaba's *Clytia* sp. from "Boneri," Bishamon Cove, Sagami Sea. Fortunately Stechow has republished Inaba's excellent description and text-figures, which furnish many details overlooked by Thornely, and enable us to refer the Low Isles specimens with some degree of certainty to *Clytia delicatula* (Thornely). Jäderholm has also recorded this species, under the name of *Campanularia delicatula*, from Japanese waters.

In the specimens before us the characters of the trophosome agree with Inaba's description and figures reproduced by Stechow. The form of the gonangia, however, is not in exact agreement with Inaba's drawings, since the peduncle is somewhat more pronounced in the Low Isles specimens than in those from Japan.

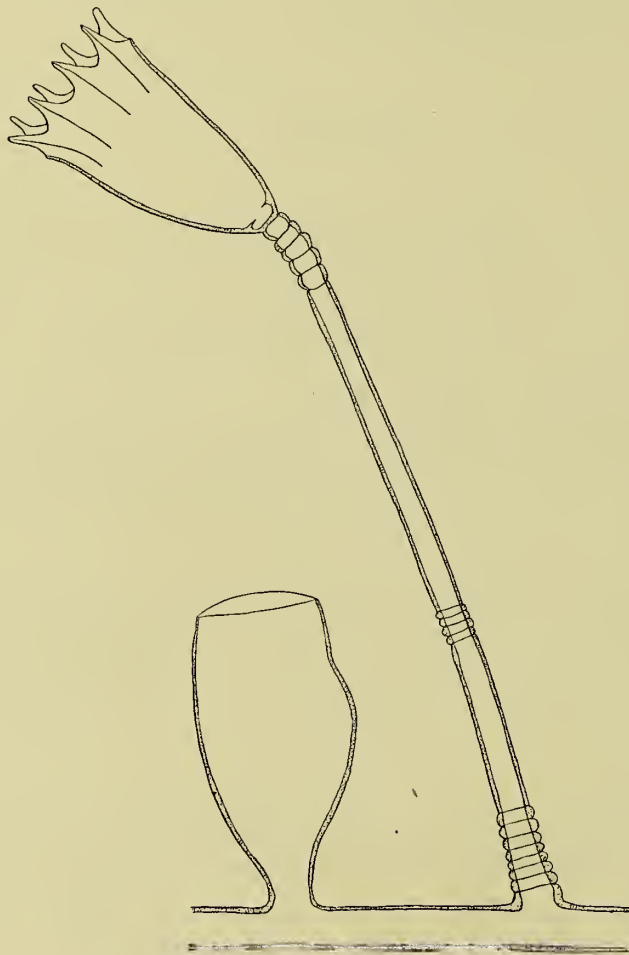
The gonangia arise from the creeping stolon, but in a single instance a gonangium was observed to spring from one of the long peduncles bearing a hydrotheca. Stages in

* Trebilcock, Proc. Roy. Soc. Vict., n.s., XLI, 1928, p. 1.

the development of the medusae can be seen in the various gonangia, but the material does not permit of a detailed description of the characters assumed by the fully-formed medusa.

DIMENSIONS.—

Stolon, diameter	0.07–0.09 mm.
Peduncle of hydrotheca, length	Up to 1.8 „
„ „ diameter	0.06–0.07 „
Hydrotheca, length	0.49–0.62 „
„ diameter at mouth	0.17–0.32 „
Gonangium, length	0.64–0.81 „
„ greatest diameter	0.24–0.29 „



TEXT-FIG. 1.—*Clytia delicatula* (Thornely).

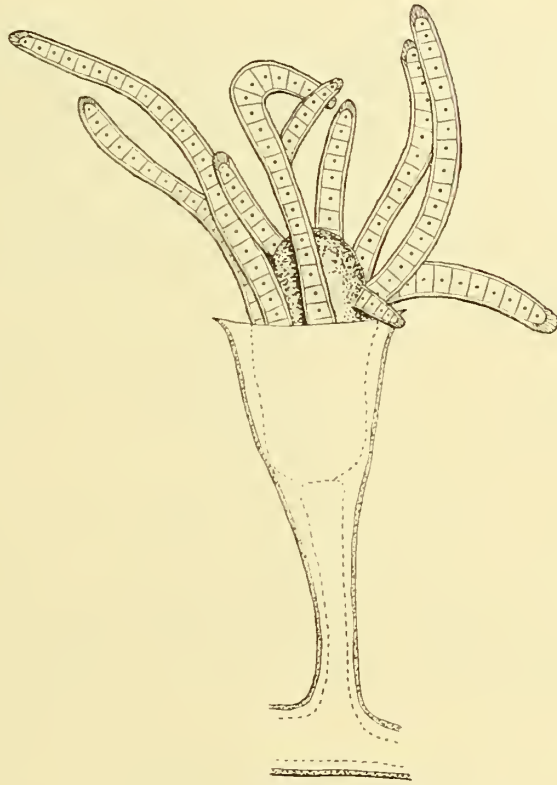
LOCALITY.—Low Isles, Great Barrier Reef. Numerous colonies were found, growing on Sargassum weed collected in the lagoon and along the sandy beach January, 1929.

DISTRIBUTION.—Previously recorded from “Boneri,” Bishamon Cove, Sagami Sea (Inaba); Blanche Bay, New Britain, 40 fathoms (Thornely); Hirudo Strait, Japan (Jäderholm); Sagami Bay, Japan (Stechow); Golden Hind near Niigata, west coast of Hondo, Japan (Stechow). The species is new to the Great Barrier Reef.

Family LAFOEIDAE.

Genus *Hebella*, Allman.*Hebella crateroides*, Ritchie.*Hebella crateroides*, Ritchie, Rec. Ind. Mus. V, 1910, p. 6, pl. iv, fig. 1; *idem*, Jarvis, Trans. Linn. Soc. Lond. Zool. XVIII, 1922, p. 336.

A single colony occurs on the stem and branches of a Plumularian Hydroid (*Lytocarpus phoeniceus*) from Diving Station No. 1, Low Isles. From a creeping hydrorhiza there arise here and there small colourless hydrothecae with gracefully everted margins. These

TEXT-FIG. 2.—*Hebella crateroides* (Ritchie).

hydrothecae are somewhat larger than those originally described from the Andaman Islands. The hydranths bear from ten to eleven tentacles, whereas Ritchie's specimens had about six to eight tentacles.

Gonosome absent.

DIMENSIONS.—

	Barrier Reef specimens.	Andaman Islands specimens.
Hydrotheca, length . . .	0.42–0.45 mm.	0.36–0.39 mm.
„ diameter at mouth . . .	0.18–0.20 „	0.18–0.21 „

LOCALITY.—Growing on *Lytocarpus phoeniceus* from Diving Station No. 1, Low Isles, Great Barrier Reef.

DISTRIBUTION.—Previously recorded from Andaman Islands, 270 to 45 fathoms (Ritchie); Farquhar Atoll (Jarvis). This species is new to the Great Barrier Reef.

Family SYNTHECIDAEE.

Genus *Hincksella*, Billard.

Hincksella, Billard, Arch. Zool. Exp. Gén., Notes et Revue, LVII, 1918, p. 22; *idem*, Billard, Les Hydroides de l'Exped. du Siboga, VIIb, 2, Synthecidae et Sertularidae, 1925, p. 121.

Hincksella sibogae, Billard.

Hincksella sibogae, Billard, Arch. Zool. Exp. Gén., Notes et Revue, LVII, 1918, p. 23, fig. 2; *idem*, Billard, Les Hydroides de l'Exped. du Siboga, VIIb, 2, Synthecidae et Sertularidae, 1925, pl. 122, p. vii, fig. 1, and text-fig. 1a-e.

A solitary colony, 57 mm. in height, alone represents this species from Station II. The main stem, which is fascicled at the base, is denuded of its branches for a length of 38 mm.; the distal 19 mm. bear nine alternate branches. The characters of the trophosome are in complete agreement with those described by Billard. The shape of the hydrothecae is very characteristic; each has a regular circular margin, without a trace of operculum. The hydrotheca attains its greatest diameter at the mouth, and gradually narrows towards the base. The adcauline wall is adnate for the greater part of its length, the free moiety consequently being very short.

Gonosome absent.

DIMENSIONS.—	Barrier Reef specimen.	Siboga specimen.
Hydrotheca, length	0.24-0.26 mm.	0.21-0.24 mm.
„ diameter at mouth	0.29-0.31 „	0.26-0.28 „

LOCALITY.—Station II, Linden Bank, 28 fathoms; bottom, shell and sand; 24th November, 1928.

DISTRIBUTION.—Hitherto recorded only from "Siboga" Station 49A in 8° 23.5' S., 119° 4.6' E.; Détroit de Sapeh, 69 m.; "Siboga" Station 65A, Très près de la Station 65, dont la latitude et la longitude sont 7° 0' S., 120° 34.5' E., 3-400 m. (Billard). This species is new to the Great Barrier Reef.

Family SERTULARIIDAE.

Genus *Dynaemna*, Lamouroux.*Dynamena crisioides*, Lamouroux.

Dynamena crisioides, Lamouroux, Des. Polyp. Flex., in Quoy et Gaimard, Voyage . . . l'Uranie et la Physicienne Zool. 1824, p. 613, pl. 90, figs. 11, 12; *idem*, Billard, Les Hydroides de l'Exped. du Siboga, VIIb, Synthecidae et Sertularidae, 1925, p. 181, pl. vii, fig. 21, text-figs. xxxvi-xxxvii.

Dynamena tubuliformis, Marktanner-Turneretscher, Ann. Naturh. (Mus.) Hofmus. Wien, V, 1890, p. 238, pl. iv, fig. 10.

Thuiaria tubuliformis, Briggs, Rec. Aust. Mus. XII, 1918, p. 38 (references).

Many specimens of this typical, tropical species, the largest 22 mm. in height, were collected at Low Isles, where it proved to be the most frequently-occurring Hydroid on the reef. The colonies were usually found attached to the sides and bases of dead coral blocks left exposed, often for considerable periods, at low tide.

GONOSOME.—Gonangia of characteristic form were present on many of the colonies collected during the month of January, 1929.

SYNONYMY.—We have assigned these specimens to *Dynamena crisioides*, following Billard, whose examination of Lamouroux's type has established the identity of Marktanner-Turneretscher's *D. tubuliformis* with *D. crisioides*.

LOCALITY.—Low Isles, Great Barrier Reef.

Genus *Idiella*, Stechow.

Idia, Lamouroux, Hist. Polyp. Cor. Flex. 1816, p. 199 (name preoccupied).

Idiella, Stechow, Zool. Jahrb., Syst. Bd. XLII, 1919, p. 106.

Idiella pristis (Lamouroux).

Idia pristis, Lamouroux, Hist. Polyp. Cor. Flex. 1816, p. 200, pl. v, figs. AA, B, C, D, E; *idem*, Bale, Cat. Austr. Hyd. Zooph. 1884, p. 113, pl. vii, figs. 1, 2; pl. xix, fig. 33.

Diphasia rectangularis, Lendenfeld, Proc. Linn. Soc. N.S. Wales, IX, 1885, p. 914, pl. xli, figs. 6-8.

The colonies of this widely-distributed species agree in detail with Bale's description and figures of other Australian specimens, except that the slight angular ridge extending along the front of the hydrotheca, from the base to the aperture, is generally absent.

LOCALITIES.—Station II, Linden Bank, 28 fathoms; bottom, shell and sand; 24th November, 1928. Station IX, Penguin Channel, 12 to 14 fathoms; 22nd February, 1929. Station XII, Penguin Channel, 10 to 15½ fathoms; bottom, rock and shell; 24th February, 1929. Station XIII, half a mile west of Two Isles, 16½ fathoms; 9th March, 1929.

Family PLUMULARIIDAE.

Genus *Polyplumaria*, Sars.

Polyplumaria cornuta (Bale).

Plumularia cornuta, Bale, Cat. Austr. Hyd. Zooph. 1884, p. 132, pl. xi, figs. 1, 2.

Polyplumaria cornuta, Billard, Les Hydroides de l'Exped. du Siboga, VIIa, I, Plumulariidae, 1913, p. 53, pl. iii, fig. 33; pl. iv, figs. 35, 36.

Two specimens, the larger reaching a length of 45 cm., represent this rather variable species originally described by Bale from an incomplete colony two feet in height. The characters of the trophosome are similar to those enumerated in Billard's extended description, which supplements Bale's account of the distribution of the sarcothecae and the structure of the aborted secondary hydrocladia.

DIMENSIONS.—

Hydrocladium, length	Up to 8 mm.
Hydroclade internode, length	0.34-0.37 „
Secondary hydrocladium, length	0.49-0.60 „
Hydrotheca, depth	0.17 „
„ breadth at mouth	0.10-0.12 „

LOCALITIES.—Station II, Linden Bank, 28 fathoms; bottom, shell and sand; 24th November, 1928. Quarter of a mile south of Cape Kimberley, 4 fathoms; 2nd December, 1928.

DISTRIBUTION.—Previously recorded from Port Molle, 15 fathoms ; Port Denison ; and Holborn Island, 20 fathoms, Queensland (Bale). The "Siboga" Expedition secured numerous specimens of this species at sixteen stations in the East Indies, at depths ranging from 9 to 216 metres (Billard).

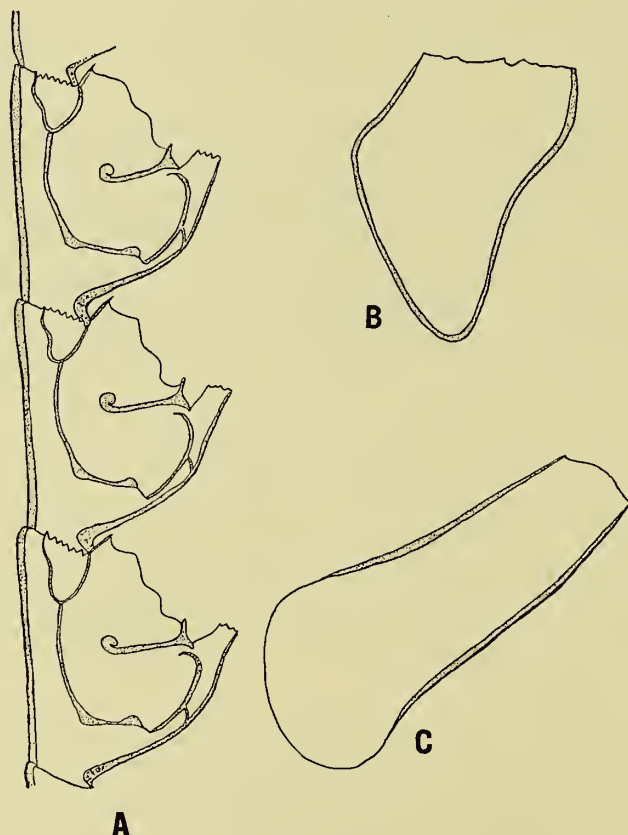
Genus *Thecocarpus*, Nutting.

Thecocarpus angulosus (Lamarck).

Plumularia angulosa, Lamarck, Hist. Nat. des Anim. sans Vert. II, 1816, p. 126.

Thecocarpus angulosus, Billard, Les Hydroides de l'Exped. du Siboga, VIIa, I, Plumulariidae, 1913, p. 85, figs. lxx-lxxiv (synonymy).

Acanthocladium angulosum, Stechow and Müller, Abh. Senckenb. Naturf. Ges. XXXV, 1923, p. 476.



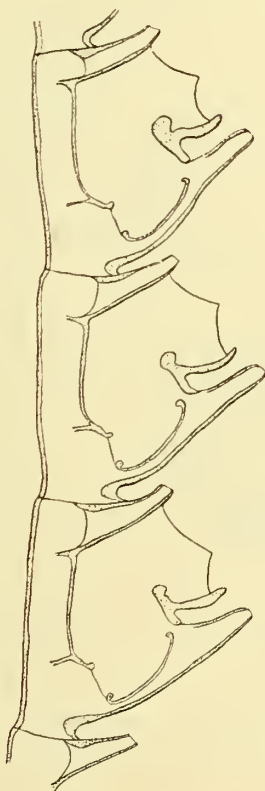
TEXT-FIG. 3.—*Thecocarpus angulosus* (Lamarck). A. Hydrothecae. B. Lateral sarcotheca from a hydrotheca situated near the distal extremity of a hydrocladium. C. Lateral sarcotheca from a hydrotheca situated near the proximal end of a hydrocladium.

Numerous colonies of this exceedingly variable species were obtained in the dredge at six different stations, at depths ranging from 10 to 28 fathoms. The form of the hydrothecae approaches closest to the drawing (fig. lxx, c) given by Billard in his "Siboga" Report for a specimen from Station 164. In the specimens before us, a small septum runs across the cavity of the mesial sarcotheca. This structure is apparently wanting in the "Siboga" specimens, although Billard's figures indicate a thickening of the perisarc at the point where this partition occurs in the Barrier Reef forms of *T. angulosus*.

The lateral sarcothecae display a very wide range of variation; those accompanying a hydrotheca situated near the distal extremity of a hydrocladium are short and broad, with a distinctly crenulated margin, but a gradual change in shape takes place, until in the proximal portion of the hydrocladium they have become drawn out into long tubular structures.

GONOSOME.—Corbulae, up to 8 mm. in length, occur on several of the colonies. They are of the open type, consisting of ten to eleven pairs of separate corbula-leaves, and carry a series of gonangia in the form of ovate bodies with extremely short peduncles for attachment.

LOCALITIES.—Station II, Linden Bank, 28 fathoms; bottom, shell and sand; 24th November, 1928. Station IX, Penguin Channel, 12 to 14 fathoms; 22nd February, 1929. Station XII, Penguin Channel, 10 to 15½ fathoms; bottom, rock and shell; 24th February, 1929. Station XIII, half a mile west of Two Isles, 16½ fathoms; 7th March, 1929. Station XXII, east of Snake Reef, 13½ fathoms; bottom, mud with Foraminifera and shells; 11th March, 1929. Station XXV, in Papuan Passage, 20 to 25 fathoms; bottom, Foraminifera and coral fragments; 17th March, 1929.



TEXT-FIG. 4.—*Lytocarpus philippinus* (Kirchenpauer).

Genus *Lytocarpus*, Allman.

Lytocarpus philippinus (Kirchenpauer).

Aglaophenia philippina, Kirchenpauer, Abh. Natur. Hamburg, V, Abt. 3, 1872, p. 45, pls. i, ii, vii, fig. 26.

Aglaophenia urens, Kirchenpauer, Abh. Natur. Hamburg, V, Abt. 3, 1872, p. 46, pls. i, ii, vii, fig. 27.

Lytocarpus philippinus, Bale, Proc. Roy. Soc., Vict. XXXI (N.S.), 2, 1919, p. 351 (synonymy).

Macrorhynchia philippina, Stechow and Müller, Abh. Senckenb. Naturf. Ges. XXXV, 1923, p. 475.

A number of small colonies, the largest not exceeding 28 mm. in height, were collected on the branches of dead corals taken from the Moat, Low Isles. The specimens possess similar trophosome characters to those described by Bale, except that the hydrothecae have distinct lateral lobes with definite embayments between them.

Gonosome absent.

Colour in life, pale blue.

DIMENSIONS.—

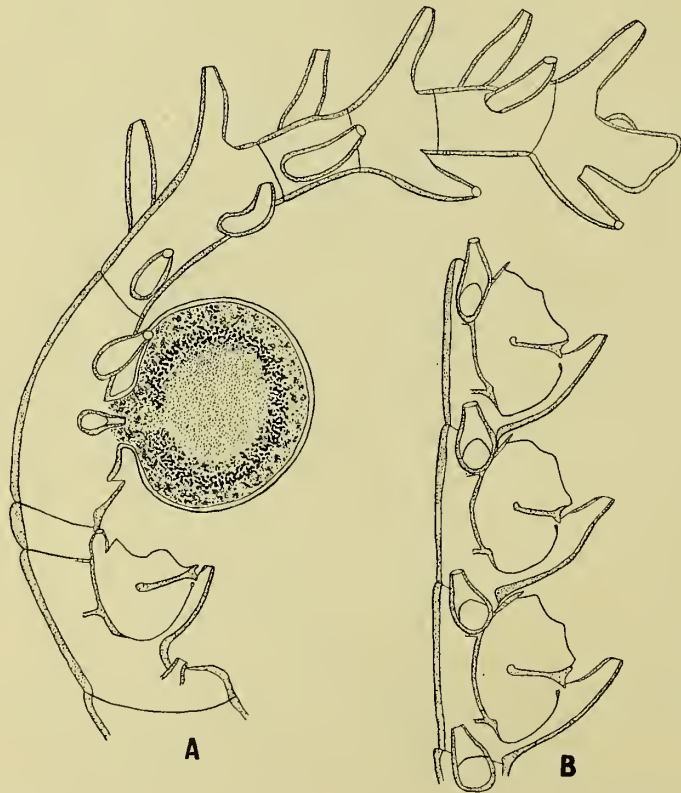
Hydrocladium, length	up to 4 mm.
Hydroclade internode, length	0.30–0.33 „
Hydrotheca, depth	0.25–0.28 „
„ breadth at mouth	0.12–0.14 „

LOCALITY.—The Moat, Low Isles, Great Barrier Reef; 19th March, 1929, and 20th May, 1929.

Lytocarpus phoeniceus (Busk).

Plumularia phoenicia, Busk, Voy. of "Rattlesnake," Edited by J. Macgillivray, I, 1852, p. 398.

Aglaophenia phoenicea, Bale, Cat. Austr. Hydr. Zooph. 1884, p. 159, pl. xv, figs. 1–5; pl. xvii, figs. 1–4; pl. xix, fig. 31.



TEXT-FIG. 5.—*Lytocarpus phoeniceus* (Busk). A. Modified hydrocladium bearing lenticular gonangium and two rows of sarcothecae. B. Hydrothecae.

The collection contains several specimens of *Lytocarpus phoeniceus*, which were collected at Diving Station No. 1, Low Isles. The characters of the trophosome most nearly resemble those in Bale's figure (pl. xv, fig. 5) of a variety from Gloucester Passage, Queensland.

GONOSOME.—The colonies carry typical, lenticular gonangia, each of which is attached to a modified hydrocladium, armed with two rows of long sarcothecae. The proximal internode of the hydrocladium bears a hydrotheca with a very reduced mesial sarcotheca.

LOCALITY.—Diving Station No. 1, Low Isles, Great Barrier Reef; 19th May, 1929.

Genus *Halicornaria*, Busk.

Halicornaria longicornis (Busk). (Plate I, fig. 4.)

Plumularia longicornis, Busk, Voy. "Rattlesnake," Edited by J. Macgillivray, I, 1852, p. 399.

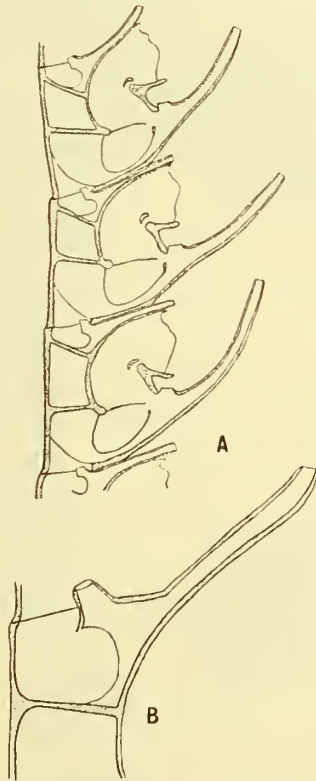
Aglaophenia longicornis, Kirchenpauer, Abh. Ver. Hamb. V. Abt. 3, 1872, p. 47, pls. i and vii, fig. 28;

idem, Bale, Cat. Austr. Hyd. Zooph. 1884, p. 157, pl. xiv, figs. 7, 8; pl. xvii, fig. 5; *idem*, Marktanner-Turneretscher, Ann. naturh. (Mus.) Hofmus. Wien, V, 1890, p. 267; *idem*, Kirkpatrick, Proc. Roy.

Dublin Soc., 1890, p. 604.

Lytocarpus longicornis, Bedot, Rev. Suisse Zool. XXVIII, 1921, pp. 315, 321.

Macrorhynchia (?) *longicornis*, Stechow and Müller, Abh. Senckenb. Naturf. Ges. XXXV, 1923, p. 474.



TEXT-FIG. 6.—*Halicornaria longicornis* (Busk). A. Hydrothecae. B. Lateral sarcotheca.

The colony from Station IX is yellowish-white in colour and reaches a height of 6 cm. The specimens from Station XII are much darker in colour, due to the presence of black or very dark brown pigment-granules in the cells of the coenosarc and in the tissues of the hydranths. The largest colony from this station attains a height of 19 cm., while two other specimens from the same locality measure 13 and 14 cm. in height respectively.

The macroscopic appearance of this Hydroid and the structure of the trophosome have been fully described by Bale and other writers, but the gonangia have always escaped observation, even when fully-grown specimens have been available for examination.

Two of the colonies from Station XII are of extreme interest, since they bear mature gonangia. The presence of these structures enables us to describe and figure the gonosome for the first time.

GONOSOME.—The gonangia are carried on the front of the branches between the bases of the hydrocladia. They form a row of fan-shaped receptacles along the branch, each one springing from a mammiliform process, which bears also a hydrocladium and two cauline sarcothecae.

The gonangium, when viewed in its broader aspect, exhibits a very short peduncle arising from a mammiliform process of the branch. Above the point of attachment the walls of the gonangium (Plate I, fig. 4) rapidly diverge, forming a fan-shaped structure, which reaches a breadth of 0.35 to 0.37 mm. The distal extremity of the gonangium is markedly convex. In side view the gonangium appears extremely thin and compressed, with a width of only 0.09 to 0.11 mm.

DIMENSIONS.—

Gonangium, length	0.48–0.53 mm.
„ breadth in frontal aspect	0.35–0.37 „
„ „ lateral aspect	0.09–0.11 „

LOCALITIES.—Station IX, Penguin Channel, 12 to 14 fathoms; 22nd February, 1929. Station XII, Penguin Channel, 10 to 15½ fathoms; bottom, rock and shell; 24th February, 1929.

DISTRIBUTION.—Previously recorded from Torres Straits (Busk); Singapore (Kirchenpauer); Fitzroy Island and Albany Passage, Queensland (Bale); Port Jackson, N.S. Wales (Marktanner-Turneretscher); Aru Islands (Stechow and Müller).

Genus *Aglaophenia*, Lamouroux.

Aglaophenia cupressina, Lamouroux.

Aglaophenia cupressina, Lamouroux, Hist. Polyp. Cor. Flex. 1816, p. 169; *idem*, Bale, Biol. Res. "Endeavour," III, 1915, p. 319, pl. xlvii, figs. 6–8 (synonymy).

Three colonies, the largest attaining a height of 15 cm., represent this characteristic, reef-inhabiting species.

GONOSOME.—Immature corbulae are present on the specimens.

LOCALITIES.—Lizard Island, Reef A; 3rd June, 1929. Ribbon Reef, Outer Barrier; 4th June, 1929. June Reef, Outer Barrier; 6th June, 1929.

DISTRIBUTION.—This species has previously been recorded by Bale from the Great Barrier Reef at North-West Island, off Port Curtis, Queensland. Billard's "Siboga" Report discusses the distribution of this species, which has been described under various synonyms from many widely-separated localities in the Indian and Pacific Oceans. More recently Hargitt (Philipp. J. Sci. Manila, XXIV, 1924) has recorded this Hydroid as *Aglaophenia macgillivrayi* (Busk) from the reefs near Mindanao, Philippine Islands, at a depth of 8 to 10 fathoms.

PLATE I.

FIG. 1.—*Myrionema amboinense*, Pictet. Hydranth bearing male gonophores.

FIG. 2.—*Myrionema amboinense*, Pictet. Proximal end of hydranth with female gonophores.

FIG. 3.—*Myrionema amboinense*, Pictet. Egg attached to pedicel.

FIG. 4.—*Halicornaria longicornis* (Busk). Gonangium in frontal aspect.

